

# III STORMWATER BEST MANAGEMENT PRACTICES FOR SPECIFIC ACTIVITIES

## BMP ACTIVITY SHEETS

This chapter consists of a series of information sheets listing the best management practices (BMPs) required for various activities conducted in unincorporated King County.

The manual limits the requirements to a number of minimal measures that reasonably balance stormwater pollution reduction with feasibility and cost. The manual also includes additional, recommended BMP's that should always be considered in the effort to control pollution. King County's goal is to reduce pollution through prevention efforts, emphasizing source control BMPs before treatment.

Every property in the county has unique characteristics and drainage systems. Some sites have a constructed storm sewer system with catch basin inlets, whereas others drain to a ditch or infiltrate into the ground. The type of drainage system as well as the slope and ground cover of a site will affect the selection of BMPs. The activity sheets offer flexibility in BMP selection and as much as possible recognize the wide variety of site conditions that may be encountered.

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This chapter is designed so that businesses only receive the information that is pertinent to their site. Therefore the activity sheets to be placed in this chapter may need to be obtained by request after completing the worksheet in chapter one. The options for obtaining these sheets is described in the step-by-step approach in chapter one.

Please note that you are responsible for your own activities as well as those activities and services rendered by a vendor you hire. Before hiring a vendor, ensure that they follow best management practices and comply with all federal, state, and local laws.

## OPTIONAL BMPs

The BMPs listed below are measures that should be considered at all times for improving pollution control. These BMPs are NOT REQUIRED, but should be incorporated in your plan of implementing BMPs. Implementation of some of these BMPs may reduce or eliminate the need to implement other more complicated or costly BMPs discussed later in the activity sheets.

### **1** Locate Activities as Far as Possible From Surface Drainage Paths

Locating activities on high ground, far from drainage paths, ditches, gutters and storm drains allows more time to recognize spills and act to prevent water contamination.

### **2** Avoid the Activity or Reduce its Occurrence

Often an alternate production process or material application process can be used to substitute for another, more polluting, process. Ideally, a polluting activity can be avoided altogether, or its frequency of occurrence reduced. An example is washing vehicles less often or taking vehicles to commercial car washes or detail shops rather than washing on site.

### **3** Use Less Material

Improper disposal of excess material or increased application of materials simply because excess is available can cause pollution. Purchase only the amount of material that will be needed for foreseeable use. In most cases you will see cost savings in both purchasing and disposal.

### **4** Use the Least Toxic Materials Available

All applications of solid and liquid materials should use the least toxic products and raw materials available, whether in production; cleaning; pesticide applications; or other uses. The Seattle-King County Department of Public Health's Business Waste Line should be consulted for information on using less toxic products.

## **5 Create and/or Maintain Vegetated Areas Near Activity Locations**

Grass, and other types of vegetation can filter out many pollutants in stormwater runoff. Vegetated areas should be maintained around areas where polluting activities occur, especially down slope of activity areas. Routine maintenance will keep vegetated areas healthy and capable of filtering pollutants. (If using installed irrigation systems see [K.C.C. 21A.16](#)).

## **6 Recycle as Much as Possible**

Recycling is always preferable to disposal of unwanted materials. Leftover paints, finishes, cleaning materials, building materials, etc. may be used by someone else, so don't throw them away. Contact a neighbor, friend, school, church, community group, theater group, etc. to see if your leftover materials can be used. Many empty containers and other common items are recyclable. Contact the King County Solid Waste Division's Business Recycling Program and the Seattle-King County Department of Public Health's Industrial Materials Exchange for recycling options.

## **7 Educate Others About Stormwater Pollution Prevention**

Educate your employees, business associates, contractors, family, and friends about stormwater pollution control. Encourage others to find solutions to stormwater pollution problems, and to continue learning about pollution control techniques.

## **8 Implement Treatment BMPs**

Treatment BMPs are used to remove pollutants from stormwater before being discharged from a site. These include oil water separators and other catch basin inserts that control pollutants in the piped system and as well as numerous biological systems such as biofiltration swales, infiltration, and constructed wetlands. These BMPs may be a preferred option in certain circumstances. A number of treatment BMPs are described in Chapter Four.

## Required BMPs For All Activities

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### MINIMUM REQUIREMENTS

**The following BMPs are required if you own or occupy property in unincorporated King County (not including single family residential property):**

**1**

#### **Clean Your Storm Drainage System.**

Clean your storm drainage system, including storm drains, gutters, catch basins, and conveyance ditches to prevent the transport of pollutants into receiving waters. Routine maintenance procedures must include cleaning of the storm drainage system, without using water to flush sediments and debris, through the system.



*See BMP Info Sheet 7 in Chapter 4 for details on catch basin cleaning requirements.*

**2**

#### **Stencil Your Storm Drains.**

Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.




*You can obtain stencils from the King County Surface Water Management Division at 296-1900.*

**3**

#### **Eliminate Illicit Connections to the Storm Drainage System.**

A common situation that can cause severe stormwater pollution problems is discharge of non-stormwater to the storm drainage system. Examples are discharges from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges should be going to the sanitary sewer system, a

holding tank, an on-site process water treatment system, or a septic system. You must correct these illicit discharges. If you have any question as to whether your discharge is allowable, contact the [King County Surface Water Management Division, Water Quality Engineers at 296-1900](#).

 *See [BMP Info Sheet 1 in Chapter 4](#) for information on how to check for illicit connections. You can also ask for help from your local sewer utility. If you find out that your internal drains are improperly connected to the storm drainage system, they will need to be either removed, permanently plugged, or connected to the sanitary sewer, septic system, on-site treatment system, or a holding tank.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Storage of Liquid Materials in Stationary Tanks

This activity applies to you if you store any type of liquid chemicals, waste oils, solvents, or petroleum products in above ground stationary tanks. Leaking tanks on these sites can contribute toxic compounds, oils and greases, heavy metals, abnormal pH, and nutrients to stormwater runoff. In addition, spills may occur during liquid transfer operations to and from the tanks.

This activity does not apply to underground storage tanks or to businesses permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes. Storage of reactive, combustible, or flammable liquids must comply with the fire code requirements and may need to comply with Washington State Department of Ecology regulations. See Chapter 5 for details on other agency regulations.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage of liquid materials in stationary tanks:**

- 1** Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow or be washed into the storm drainage system, surface waters, or groundwater.

 [See BMP Info Sheet 5 in Chapter 4 for information on containment.](#)

**OR**

If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collect runoff from the storage tank area.

 [See BMP Info Sheet 8 in Chapter 4 for information on oil/water separators.](#)

**Routine maintenance:**

- Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/ recycled or properly disposed.
- Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain.*
- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Storage of Any Liquid Material in Portable Containers

This activity applies to you if you store any type of liquid chemicals, waste oils, solvents or petroleum products in portable containers (such as drums). This activity covers permanent storage as well as temporary storage areas at temporary sites. Spills and drips of these liquids, or overtopping of storage containers, can contribute toxic compounds, oils and greases, heavy metals, abnormal pH, and nutrients to stormwater runoff.

This activity does not apply to businesses that are permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes. Storage of reactive, combustible, or flammable liquids must comply with Washington State Department of Ecology regulations. See Chapter 5 for details on other agency regulations.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage of liquid materials in portable containers:**

- 1** Place tight-fitting lids on all containers.
- 2** Enclose or cover the containers where they are stored.  
The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.
- 3** Raise the containers off the ground by use of pallet or similar method, with provisions for spill control.

**OR**

Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters or groundwater.

 *See BMP Info Sheet 5 in Chapter 4 for information on containment options.*

**4**

Place drip pans or absorbent materials beneath all mounted container taps, and at all potential drip and spill locations during filling and unloading of containers. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

**5**

#### **Routine maintenance:**

- Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area monthly if it is paved, do not hose down the area to a storm drain.
- Check containers (and any containment sumps) daily for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums. New or secondary containers must be labeled with the product name and hazards.
- Collect all spilled liquids and properly dispose of them.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Storage of Soil, Sand, Salt and Other Erodible Materials

This activity applies to you if you are stockpiling erodible raw materials such as soil, sawdust, gravel, sand, and road deicing salts. It covers permanent sites as well as temporary construction sites and other temporary locations. Raw material stockpiles can easily erode due to wind or precipitation and contribute suspended solids, nutrients, heavy metals, and abnormal pH to stormwater runoff.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage or stockpiling of MORE THAN 5 cubic yards of erodible material on a normal basis (granted that stockpiles of less than 5 cubic yards are not in a location where they could erode into the storm drainage system):**

- 1** Cover and contain the stockpiles of raw materials to prevent stormwater from running into the covered piles. The covers must be in place at all times when work with the stockpiles is not occurring.

**OR**

If the stockpiles are so large that they cannot feasibly be covered and contained, you must implement erosion control practices at the perimeter of your site and at any catch basins to prevent erosion of the stockpiled material off site.

 *See BMP Info Sheet 3 in Chapter 4 for information on covering options.*

 *See BMP Info Sheet 5 in Chapter 4 for information on containment options.*

- 2** **Routine maintenance:**


- Sweep paved storage areas monthly for collection and disposal of loose solid materials, do not hose down the area to a storm drain or conveyance ditch.

- Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area.

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage or stockpiling of LESS THAN 5 cubic yards of erodible material on a temporary basis:**

**1**

Cover the stockpiles of raw materials to prevent stormwater from running into the covered piles. The cover must be in place at all times when work with the stockpiles is not occurring.

 [See BMP Info Sheet 3 in Chapter 4 for information on covering options.](#)

#### ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**

**1**

A catch basin insert, configured for sediment removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decision.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Storage of Pesticides and Fertilizers

This activity applies to you if you store non-liquid pesticides or fertilizers. See Activity Sheets A-2 and A-3 for storage of liquid materials. Runoff from pesticide storage areas can be contaminated with toxic compounds, oils, and heavy metals; runoff from fertilizer storage areas can be contaminated with nutrients and fecal coliform bacteria. The primary problem with most of these pollutants is that they are soluble, which means they cannot easily be filtered out of stormwater runoff, or out of contaminated water that seeps into the soil. Storage of pesticides and fertilizers may need to comply with the State Department of Agriculture regulations. See Chapter 5 for details on other regulations.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage of pesticides and fertilizers:**

**1**

Cover pesticides and fertilizers.



*See BMP Info Sheet 3 in Chapter 4 for information on covering options, which includes nonstructural or structural options.*

**2**

Raise the material off the ground by use of pallets or similar methods, with provisions for spill control.

**OR**

Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters or groundwater.



*See BMP Info Sheet 5 in Chapter 4 for information on containment options.*

**3**

**Routine maintenance:**

- Store and maintain appropriate spill clean up materials in a location known to all near the storage area.

- Clean up any spilled fertilizer or pesticides and ensure that the materials are kept in the designated covered or contained areas.
- Sweep paved storage areas monthly for collection and disposal of loose solid materials, do not hose down the area to a storm drain or conveyance ditch.

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## Storage and Treatment of Contaminated Soils

This activity applies to you if you store and treat soils contaminated with toxic organic compounds, oils and greases, and heavy metals. Typically this situation arises when other site work is being conducted, such as removing a leaking underground tank. Contaminated soils are usually excavated and left on the premises for treatment via aeration and perhaps chemical stabilization. Stormwater runoff that comes in contact with contaminated soil can carry some of those same contaminants along with suspended solids into receiving waters. The Washington State Department of Ecology regulates businesses engaged in this activity. In addition, a permit from the Puget Sound Air Pollution Control Agency is required if the treatment method for removing soil contaminants involves forcing air through, or sucking air from, the soil. The BMPs below supplement other required regulations.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage and treatment of contaminated soils:**

**1**

Cover or contain contaminated soils to prevent stormwater from carrying pollutants away.



*See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.*

**2**

**Routine maintenance:**

- Sweep paved storage areas monthly for collection and disposal of soil particles, do not hose down the area to a storm drain or conveyance ditch.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

- Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area.

## ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**



A catch basin insert, configured for sediment removal, may remove some of the pollutants in runoff from this activity.

(Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)



*See BMP Info Sheet 9 in Chapter 4 for more information.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Storage or Processing of Food Items

This activity applies to you if you: temporarily store fruits and vegetables outdoors prior to processing or other use; crush, cut, or shred fruits or vegetables for wines, frozen juices, and other food and beverage products; or process meats and other foods for wholesale. Stormwater runoff from these areas may be contaminated with nutrients from crushed or decaying fruits and vegetables and assorted suspended solids from unwashed produce.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in STORAGE of fruits or vegetables:**

**1**

Minimize use of water to clean fruits and vegetables to avoid excessive runoff.

**2**

**Routine maintenance:**

- Clean the storage area weekly to collect dirt and fragments of fruits or vegetables or other foods for proper disposal in your solid waste.
- Stock cleanup materials such as brooms and dustpans near the storage area.
- Minimize outdoor storage time for fruits and vegetables whenever possible.
- Collect rotting produce frequently and dispose of properly.

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in PROCESSING of fruits, vegetables, meats, and other foods:**

**1**

Enclose the processing area. Any discharges should drain to the sanitary sewer or treatment facility.



*See [BMP Info Sheet 2 in Chapter 4](#) and [R.7 in Chapter 5](#) for information on sanitary sewer regulations.*


## Storage of Solid Waste and Food Wastes

This activity applies to you if you store solid wastes including both food and non-food wastes outdoors. This typically refers to garbage dumpsters, other outdoor waste containers, and any stockpiled garbage. Improper storage of non-food solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, and suspended solids to enter stormwater runoff. Stormwater runoff from food waste storage areas may be contaminated with oils and greases, nutrients, and suspended solids if waste containers are leaking, are not covered, or are too small to contain the amount of waste generated. If you store dangerous wastes you must follow specific regulations outlined by the Washington State Department of Ecology.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage of solid wastes or food wastes:**

- 1** Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and run-off with a berm. The waste containers or piles must be covered except when in use.

 *See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.*

- 2** Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.

- 3** **Routine maintenance:**

- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.

 *See the requirements of the Seattle-King County Department of Public Health discussed in Chapter 5 for information on acceptable containers.*

- Sweep and clean the storage area monthly if it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning your containers into a sanitary sewer according to health department requirements. See the discussion on health department regulations in Chapter 5 for more information.



*See [BMP Info Sheet 2 in Chapter 4](#) and [R.7 in Chapter 5](#) for information on sanitary sewer regulations.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Storage of Scrap and Recycling Materials

This activity applies to you if you salvage and store scrap metal, scrap equipment, junked appliances and vehicles, empty metal drums, and recyclable items such as cans, bottles, and paper products for longer than two weeks (unless material is rotated and storage is essentially continuous). Stormwater runoff from these sites may contain toxic hydrocarbons, polychlorinated biphenyls (PCBs), other toxic compounds, heavy metals, oils and greases, and suspended solids.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage of scrap and recycling materials:**

**1**

Designate an area to drain gasoline, engine fluids, and other contaminated liquids from scrapped items and dispose of waste properly (or preferably recycled) before the items are placed in the scrap storage area. The draining and transferring of fluids from vehicles and other equipment to storage containers in the designated area must be on impervious surface or over drip pans.

Contain the designated draining area to prevent stormwater from entering the storage area and carrying pollutants away.



*See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.*

**2**

**Routine maintenance:**

- Check incoming scrap materials for potential fluid contents and batteries, and always use the designated fluid draining area.
- Inspect the storage area monthly to check for contamination from leaky equipment. Promptly fix and clean any leaks, spills, or contamination in storage area.
- Sweep open areas of the scrap storage area monthly, if they are paved, to collect and properly dispose of loose

metal scraps and other particles, do not hose down the area to a storm drain.

- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

- 3** If you are involved in transporting any of these materials you must either: 1) carry spill cleanup material in the vehicle to capture any spilled liquids, or 2) place an impermeable liner in the bed of your truck to capture any spilled or leaked materials. Properly dispose or reuse any collected fluids.

#### ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**

- 1** A catch basin insert, configured for debris removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Treatment, Storage, or Disposal of Dangerous Wastes

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This activity applies to businesses that are permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes. Dangerous waste handling activities at these businesses can contribute toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, abnormal pH, and coliform bacteria to stormwater runoff. Detailed BMPs are not included here because treatment, storage, and disposal (TSD) site requirements are beyond the level of typical BMP application. Ecology regulates these facilities with specific requirements, which include the need for a National Pollutant Discharge Elimination System (NPDES) permit.



Contact the [Washington State Department of Ecology](#) at (360) 407-6000.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Cleaning or Washing of Tools and Equipment

This activity applies to you if you clean tools and manufacturing equipment such as saws, grinders, screens, and other processing devices outside of buildings. Uncontrolled outdoor washing can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, heavy metals, abnormal pH, and suspended solids to stormwater runoff.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in cleaning or washing of tools and manufacturing equipment:**



Equipment wash water is considered process water, and must discharge to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

You are encouraged to recycle your wash water with an enclosed loop system or use self contained parts washers. There are several products commercially available that enable recycling and containing of wash water and cleaning solvents.

If you cannot connect discharges to a sanitary sewer, process treatment system, or holding tank you must contact the Department of Ecology and go through the industrial waste water National Pollutant Discharge Elimination System permit process.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Cleaning or Washing of Cooking Equipment

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This activity applies to you if you clean cooking equipment such as vent filters and grills outside of buildings. Uncontrolled outdoor washing can contribute oils and greases, nutrients, and suspended solids to stormwater runoff.


### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in cleaning or washing of cooking equipment:**

- 1** Cooking equipment wash water is considered process water, and must discharge to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.

 *See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

This washing should be done in an inside sink or wash bin and not outside. If washing is done outside, it must be done in a designated area and the wash water must discharge to one of the above and provisions must be made to prevent stormwater run-on into the washing area.

 *See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Vehicle Washing and Steam Cleaning

This activity applies to you if you wash or steam clean vehicles. It also applies to mobile steam cleaning operations, and to commercial car washes. The types of vehicles may include highway maintenance trucks, taxicabs, buses, rental cars, new and used autos on lots, government and company cars, construction equipment, fork lifts, golf carts, riding lawn mowers, and similar large vehicles. Wash water from cleaning activities can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, heavy metals, and suspended solids to stormwater runoff. The soap used for washing is often a greater pollution threat than the substances washed off of vehicles.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in vehicle washing and steam cleaning:**

**1**

**It is allowable to rinse down the body of a vehicle, including the bed of a truck, with just water without doing any wash water control BMPs.**

If you wash (with mild detergents) on an area that infiltrates water, such as gravel, grass, or loose soil, it is acceptable to let the wash water infiltrate as long as you only wash the body of vehicles.

However, if you wash on a paved area and use detergents or other cleansers, or if you wash/rinse the engine compartment or the underside of vehicles, you must do **ONE** of the following options:

- (a) Designate and pave a wash area to wash all vehicles in. Discharge wash water from vehicle cleaning operations to a sanitary sewer, holding tank, or process treatment system or process through an enclosed recycling system.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

The local sewer authority and the King County Department of Metropolitan Services (Metro) have limits on the types and amounts of pollutants, such as oil and heavy metals, that can be discharged to a sanitary sewer. Absolutely no untreated wash water can enter storm drains.

**OR**

- (b) Designate and pave a wash area to wash all vehicles in. Use a storm drain cover or other effective method of preventing all wash and rinse water from entering a storm drain or other storm drainage system feature. All runoff from the activity must be collected for proper disposal to a sanitary sewer. A wet vacuum or pump can be used for this. There are several products commercially available that enable collection of runoff. This requirement also applies to mobile vehicle washing services.

**OR**

- (c) Take the vehicles to a commercial car wash or use a mobile washer which complies with (a) or (b) above.

- 2** Designated wash areas must be well marked with signs indicating where and how washing must be done.
- 3** Oil changes and other engine maintenance cannot be conducted in the designated washing area.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Mobile Interior Washing Operations

This activity applies to you if you are engaged in washing of carpets and other interior items on a mobile site-to-site basis. The typical mobile fleet washing process includes use of machines that scrub and suck dirt and other particles with a wash water solution into a portable containment device with limited capacity. Stormwater and surface waters or groundwater may become contaminated if collected wash water is disposed outdoors between site visits. Waste water from washing operations that is dumped into storm drains, on streets, in drainage ditches, and in other outdoor locations can contaminate water bodies with nutrients, suspended solids, and chemicals used in the cleaning process.

### MINIMUM REQUIREMENTS


**The following BMPs, or equivalent measures, methods, or practices, are required if you engage in mobile interior washing activities:**

- 1** Do not dispose of any waste water from this activity outdoors or to a drain connected to the storm drainage system. This point must be clear to employees. Waste water from mobile fleet washing operations may be permitted for sanitary sewer disposal if it does not contain high concentrations of toxic materials. Wash water can also be recycled.

 [See BMP Info Sheet 2 in Chapter 4 for information on disposal options.](#)

- 2** Label equipment with a message similar to “No waste water can be discharged to a storm drain, drainage ditch, or to the ground.” In addition, label equipment with the proper waste water disposal methods.

- 3** Do not dispose of sludges that are left in tanks, containers, or trucks outdoors or to a drain connected to the storm drainage system. Sludges must be disposed properly.

 [See BMP Info Sheet 2 for information on disposal options.](#)

## ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** Limit the amount of water used in interior washing operations. This limits the amount of waste water you need to worry about properly disposing.
- 2** Recycle wash water.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.


Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Pressure Washing of Buildings, Rooftops, and Other Large Objects

This activity applies to you if you are engaged in pressure washing of large, immobile objects such as building facades and rooftops on a site-to-site basis. Pressure washing can readily degrade water quality as the runoff and loosened solids typically travel directly into the storm drainage system. Wash water from pressure washing operations can be contaminated with suspended solids, heavy metals and possibly other pollutants present on the objects being washed. Pressure washing of boats in boat yards, marinas, and dry dock areas is covered by a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Washington State Department of Ecology, so the BMPs listed below do not apply to pressure washing in these locations.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in pressure washing of large objects:**

- 1** In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.  
 *See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*
- 2** If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- 3** If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

- 4** Another option is to hire a mobile washer which collects and recycles water or complies with the above.

If the painted surface being pressure washed is painted with lead or other heavy metal-bearing paint (such as chromium or cadmium), consider using a commercial pressure washing service that can collect, test, and properly dispose of the wastewater.

#### ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** A catchbasin insert, configured for debris removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.


Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Truck or Rail Loading and Unloading of Liquid Materials

This activity applies to you if you receive shipments of bulk liquid materials by truck or rail and transfer those liquids into storage tanks or containers or handle the truck or rail loading of liquid materials from tanks. Spills and drips of these liquids can potentially contribute toxic organic compounds, oils and greases, nutrients, heavy metals, and abnormal pH to stormwater runoff.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in loading and unloading of liquid materials:**




- 1** Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for rail-road tracks. Drip pans must be cleaned periodically, and drip-collected materials must be disposed of properly.  
 *See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*
- 2** Train employees in proper handling techniques during liquid transfers to avoid spills.
- 3** **Routine maintenance:**
  - Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

## Fueling Operations

This activity applies to you if you refuel vehicles on the premises, whether a large-sized gas station or a single-pump maintenance yard installation. It also covers mobile fueling operations. Stormwater runoff from fueling areas may be contaminated with toxic hydrocarbons, oils and greases, and heavy metals.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in fueling operations:**

- 1** Cover the fueling area with an overhanging roof structure or canopy so that precipitation cannot come in contact with the fueling area.  
 *See BMP Info Sheet 3 in Chapter 4 for information on covering options. An exception to this requirement is granted for mobile fueling equipment, floating fuel islands on water, and oversized vehicles that can not maneuver under a roof.*
- 2** Pave the fueling area with portland cement concrete and contain the area to prevent uncontaminated stormwater from running on the area and carrying pollutants away.  
 *See BMP Info Sheet 5 in Chapter 4 for information on containment.*
- 3** Install and maintain an oil control device in the appropriate catch basin(s) to treat runoff from the fueling area.  
 *See the [King County Surface Water Design Manual](#) for various designs and the [BMP Info Sheet 8 in Chapter 4](#) for further information on oil/water separators.*
- 4** **Routine maintenance:**
  - Post signs to remind employees and customers not to top off the fuel tank when filling and signs that ban custom-

ers and employees from changing engine oil or other fluids at that location.

- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

If you can not implement the above requirements on your site, consider ceasing your on-site fueling activities and take your vehicles to a station which meets the requirements.

#### ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**

- 1** Use absorbent pillows or similar absorbent materials in or around storm drain inlets on the property to filter oily runoff. These require frequent maintenance and close attention, but can be useful in short-term situations. Used absorbent materials containing oil must be picked up by a qualified disposal contractor.
- 2** A catch basin insert, configured for oil removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Engine Repair and Maintenance

This activity applies to you if you conduct engine repair and maintenance in vehicles and other equipment. It also applies to mobile vehicle maintenance operations, such as at construction sites. This common activity can lead to immediate stormwater contamination if it is not done in a controlled manner. This activity can contaminate stormwater runoff with toxic hydrocarbons, other toxic organic compounds, oils and greases, abnormal pH, and heavy metals. Related vehicle maintenance activities are covered under the following activity headings in this manual: “Painting, Finishing, and Coating of Vehicles, Products, and Equipment,” “Vehicle Washing and Steam Cleaning,” “Fueling Operations, and “Vehicle and Equipment Parking and Storage.”

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in engine and vehicle repair and maintenance:**

**1**

If temporary work is being conducted outside:

Use a tarp, ground cloth, or drip pans beneath the vehicle or equipment to capture all spills and drips. The collected drips and spills must be disposed, reused, or recycled properly.



*See BMP Info Sheet 2 in Chapter 4 for information on disposal options.*

**2**

If the work is done on a regular basis at a stationary business location: move the activity indoors.

**3**

**Routine Maintenance**

- Employees must be educated on proper handling and disposal of engine fluids.
- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures (You can use reusable cloth rags to clean up small drips and spills instead of disposables;

these can be washed by a permitted industrial laundry. Do not clean them at home or at a coin-operated laundry business).

- Sweep the maintenance area weekly, if it is paved, to collect loose particles, and wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

#### ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**

- 1** Absorbent material such as pillows or booms can be used around storm drains or in catch basins to absorb oil and other substances. Used absorbent materials containing oil or other engine fluids must be picked up by a qualified disposal contractor.
- 2** A catch basin insert, configured for oil removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Concrete and Asphalt Production at Stationary Sites

This activity applies to you if you mix raw materials on-site to produce concrete or asphalt. It also applies to subsequent activities such as pouring concrete structures, and making other concrete and asphalt products. Mishandling of raw materials in concrete production can introduce suspended solids and heavy metals to stormwater runoff and cause pH increases in receiving waters. In addition, stormwater pollution can result from washing of waste concrete from trucks, forms, wheelbarrows, buckets, and other equipment in the work area. The loose chunks of aggregate resulting from washing of equipment can easily reach storm drains, either in the wash water itself or in stormwater runoff. Asphalt production can introduce high concentrations of toxic hydrocarbons, other toxic organic compounds, oils and greases, and heavy metals to stormwater runoff. Asphalt emulsion and chunks of aggregate can easily wash off of equipment used in mixing and production in much the same way as concrete. Mobile concrete pouring and asphalt application are covered under a separate activity in this manual. Concrete production at mining sites is not covered by this activity.


### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in concrete and asphalt mixing and production:**

- 1** Discharge all process water from production, pouring, and equipment cleaning activities to a sump, process water treatment or recycling system, or sanitary sewer system.

 [See BMP Info Sheet 2 in Chapter 4 for information on disposal options.](#)

- 2** Contain the production and pouring area to prevent stormwater from entering the area and carrying pollutants away.

 [See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.](#)


### **3 Routine maintenance**

- Sweep the production and pouring area weekly, if it is paved, to collect loose chunks of aggregate and raw material particles for recycling or proper disposal, do not hose down the area to a storm drain.

#### **ADDITIONAL BMPS**

**The following BMPs are not required but they can provide improved pollution control:**

- 1** Use an oil control device in the catch basins to treat stormwater runoff.
- 2** Cover the production area with provisions for prevention of stormwater run-on.

 *See BMP Info Sheets 3 and 5 in Chapter 4 for information on covering and run-on prevention options.*

- 3** Pave the mixing, production and/or pouring area(s) with a slope to a central collection area. For concrete production and pouring activities, a sump drain should not be provided because it would be quickly clogged with hardened concrete. It may be wise to segregate the mixing and pouring area from the curing area because waste water from curing applications could be collected by a drain. By sloping the pavement to a central location, loose chunks of concrete or asphalt aggregate can be collected more easily and recycled or disposed of properly.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Concrete and Asphalt Application at Temporary Sites

This activity applies to you if you apply asphalt and/or pour concrete for building construction, road construction, sidewalk, curb and gutter repairs and construction, sealing of driveways and roofs, and other applications. These activities are typically done on a temporary site-to-site basis where permanent BMP measures do not apply. Asphalt application can contribute high concentrations of toxic hydrocarbons, other toxic organic compounds, oils and greases, and heavy metals to stormwater runoff. Concrete pouring can contribute suspended solids and heavy metals to stormwater runoff, and cause pH increases in receiving waters.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in concrete pouring and asphalt application at temporary sites:**

- 1** Use drip pans, ground cloths, and perhaps even heavy cardboard or plywood wherever concrete, asphalt, and asphalt emulsion chunks and drips are likely to fall unintentionally, such as beneath extraction points from mixing equipment.
- 2** Place storm drain covers or similarly effective containment devices over all nearby drains at the beginning of the work day. All accumulations of runoff, aggregate chunks, and other solids must be collected with a shovel or other mechanism for proper disposal at the end of the work day (or more frequently) prior to removing the containment device(s). Drain covers and other containment devices are commercially available.
- 3** Contain and collect the slurry from exposed aggregate washing, where the top layer of unhardened concrete is hosed or scraped off to leave a rough finish. Use a storm drain cover or other containment device, as mentioned above. All collected runoff must be properly disposed.

 [See BMP Info Sheet 2 in Chapter 4 for information on disposal options.](#)

- 4 Concrete and concrete pumping vehicles shall not under any circumstances discharge any concrete, slurry, or rinse water into street gutters, storm drains or drainage ditches.**

Designate a wash-out area on-site where cleaning of application and mixing equipment can take place and where the rinse water is controlled. It is also acceptable to dispose of rinse water and slurry in a hole in the ground big enough to contain the slurry and rinse material. Commercial products and services are also available for concrete, slurry, and rinse water disposal.

**5 Routine maintenance**

- Sweep the pouring area at the end of each day to collect loose aggregate chunks and dust, do not hose down the area to a storm drain.

**ADDITIONAL BMPs**

**The following BMPs are not required but they can provide improved pollution control:**

- 1** If possible, portable asphalt mixing equipment should be covered by an awning or other simple structure while raining to avoid contact with rainfall.
- 2** A catch basin insert configured for sediment removal, may remove some of the pollutants in runoff from this activity. This is especially useful if the activity must proceed on rainy days. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

*See BMP Info Sheet 9 in Chapter 4 for more information.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Manufacturing and Post-Processing of Metal Products

This broad activity group applies to mills, foundries, and fabricators that manufacture and/or post-process metal products at stationary sites. It does not apply to temporary activities such as welding or pipe cutting that are conducted in the field. A variety of activities such as machining, grinding, soldering, cutting, welding, quenching, cooling, and rinsing may take place. Waste water from these operations may be contaminated with toxic organic compounds, heavy metals, oils and greases, abnormal pH, and suspended solids. Stormwater runoff from areas where these activities occur can be contaminated with these same pollutants as well. These businesses may be required to apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Washington State Department of Ecology. See [Chapter 5](#) for a discussion of NPDES requirements. Note that painting, finishing, and coating of metal products is covered under a different activity in this manual.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in manufacturing or processing metal products:**

- 1** Discharge process waste water from this activity to a sanitary sewer, holding tank, or process treatment system.

 [See BMP Info Sheet 2 in Chapter 4 for information on disposal options.](#)


- 2** **Routine Maintenance**

- Sweep the pouring area at the end of each day to collect metal fragments and debris, do not hose down the area to a storm drain.

## ADDITIONAL BMPS

**The following BMPs are not required but they can provide improved pollution control:**

- 1** Cover the activity area(s) to prevent precipitation from contacting the area, and to reduce the amount of runoff that has to be detained or treated.

 *See BMP Info Sheet 3 in Chapter 4 for information on covering options.*

- 2** Use a catch basin insert configured to remove sediment, to capture stray metal particles in runoff. Clean regularly to prevent "washing" of trapped particles and conversion to highly toxic dissolved state. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 *See BMP Info Sheet 9 in Chapter 4 for information on inserts.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900


Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Painting, Finishing, and Coating of Vehicles, Products, and Equipment

This activity applies to you if you apply primers, paints, finishes, and coatings to vehicles, furniture, manufactured products, and other objects. This includes car detailing work. It also includes preparation work such as sanding and blasting. BMPs for painting of buildings are given in this manual under “Building Repair, Remodeling, and Construction.” BMPs for painting and finishing of boats and other marine objects are described under “Boat Building, Maintenance and Repair.” BMPs for storage of paints and materials are described under “Storage of Liquid Materials in Portable Containers.” Stormwater runoff from work areas where this activity occurs may be contaminated with toxic hydrocarbons and other organic compounds, oils and greases, heavy metals, and suspended solids.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are involved in painting, finishing, or coating of vehicles, products, and equipment:**

- 1** Enclose all work while using a spray gun or conducting sand blasting (unless too large) according to Puget Sound Air Pollution Control Agency requirements.  
 *See Chapter 5 for information on Puget Sound Air Pollution Control Agency requirements, and also for fire code implications.*
- 2** **Routine maintenance**
  - Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures.
  - Train employees in careful application of paints, finishes, and coatings to reduce misuse and over spray.
  - For outside work: Use ground cloths and/or drip pans in locations where paints, finishes, and other liquid materials are mixed, carried, and applied.

- Sweep the area at the end of each day, do not hose down the area to a storm drain.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Wood Treatment and Preserving

This activity applies to you if you are involved in wood treatment operations that either are performed outdoors or include storage of freshly treated wood materials outdoors. It includes permanent sites as well as temporary (or mobile) sites. Some of these operations are unique to large-scale commercial wood preserving and therefore require a specific set of BMPs. Because materials used in wood treatment and preserving are extremely toxic, this activity is segregated from similar activities discussed elsewhere in this manual.

Stormwater runoff from wood treatment and preserving activities may be contaminated with toxic hydrocarbons and other organic compounds, heavy metals, oils and greases, and suspended solids. Large-scale commercial operations are required to have a stormwater National Pollutant Discharge Elimination System (NPDES) permit, administered by the Washington State Department of Ecology. See [Chapter 5](#) for more information on NPDES permit requirements. The BMPs listed below should be used to complement NPDES compliance measures at large-scale wood treatment operations, but do not substitute for the permit requirements.

Small-scale wood treatment operations, such as building contractors, do not typically require an NPDES permit, and therefore must follow the measures listed below.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in wood treatment and preserving:**

- 1** Use ground cloths or drip pans to collect drips.
- 2** Store portable containers of wood preservative compounds indoors or in a covered location when not in use.


 [See Activity Sheet A-3 “Storage of Liquid Materials in Portable Containers.”](#)

In addition, the following BMPs are required for large-scale commercial operations:

- 3** Hold dipped lumber over dip tanks until dripping ceases (if applicable).

**4** Store treated lumber in a covered and paved area for at least 24 hours following treatment (longer during cold periods) so that precipitation does not come in contact with the treated products until they are fully dry. Contain the storage area to restrict stormwater from running into the covered area.

**5** Contain the wood treatment equipment and work areas to prevent stormwater from entering the area and carrying pollutants away.

 *See BMP Info Sheet 5 in Chapter 4 for information on containment and run-on prevention.*

**6** **Routine maintenance:**

- Cover outdoor dip tanks when not in use.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.


## Commercial Composting

This activity applies to you if you are engaged in receiving and composting wastes as a commercial service. This typically refers to businesses which have numerous compost piles that require large open areas to break down wastes. Composting can contribute nutrients, coliform bacteria, and suspended solids to stormwater runoff. All commercial composting operations must satisfy Seattle-King County Health Department requirements. See [Chapter 5](#) for a summary of Health Department regulations for solid waste. In addition contact the Department of Ecology which is also developing specific drainage requirements for commercial composting operations. The BMPs listed below are intended to complement other regulatory requirements.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in composting wastes:**

- 1** Ensure that wastes do not contain dangerous materials that belong in a hazardous waste facility, or solid wastes that do not break down by composting. Employees must be trained to screen these materials in incoming wastes.
- 2** Locate composting areas on impervious surfaces ([King County Health Code, Section 10.48.030](#))
- 3** Drain all runoff from composting operations to a sanitary sewer, holding tank, or on-site treatment system.

 *See BMP Info Sheet 2 in Chapter 4 for information on disposal options. If biochemical oxygen demand (BOD) or fecal coliform bacteria are expected to be significant pollutants in compost runoff, drainage must be routed to a sanitary sewer or holding tank, regardless of whether a process treatment system is used.*

- 4** Contain the compost pile drainage. Containment of compost drainage will probably be best accomplished with a dike or berm, or with intercepting drains placed on the down slope side of the compost area.

 *See BMP Info Sheet 5 in Chapter 4 for information on containment. See the King County Health Code for full compliance.*

#### ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** A catch basin insert, configured for debris and sediment removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 *See BMP Info Sheet 9 in Chapter 4 for more information.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Chemical Applications - Other Than For Landscaping

This activity applies to you if you use pesticides, herbicides or other chemicals for such purposes as removing moss from rooftops, killing nuisance rodents, and using fungicides to preserve patio decks. Over application of pesticides in these situations can result in stormwater contamination in much the same way as in landscaping activities. The pollutants of concern for stormwater management are toxic organic pesticide compounds, oils, and heavy metals. People engaged in this activity must comply with Seattle-King County Department of Public Health structural pesticide applicator regulations. See [Regulation 14](#) in Chapter 5 for details on these regulations. The BMPs listed below are intended to complement other regulations. Application of pesticides for landscaping purposes must follow the BMPs discussed under “Landscaping Activities.”

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you apply chemicals for non-landscaping purposes:**

- 1** Avoid excessive application. Follow manufacturers' application guidelines and label directions. Chemicals must never be applied outside if precipitation is occurring.
- 2** Use the smallest amount of chemicals necessary to accomplish the job.

## ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** Manual pest-control strategies such as physically scraping moss from rooftops, using high-pressure sprayers to remove moss, and using rodent traps should be attempted.
- 2** Integrated pest management (IPM), a comprehensive approach to the use of pesticides which minimizes pesticide application and stresses selection of proper products and tailored application rates, is the most effective BMP measure that can be taken. IPM is applicable to businesses that frequently apply pesticides.

 *See BMP Info Sheet 6 in Chapter 4 for information on IPM.*

- 3** Educate employees about the pollution they can cause if they do not follow simple rules of application.
- 4** Select the least-toxic chemical application that can accomplish the job.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Landscaping Activities

This broad activity encompasses all aspects of landscaping, from small-scale yard maintenance to large-scale commercial landscaping businesses. It includes vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Stormwater runoff from areas that have been subject to herbicide, insecticide, or fertilizer application or extensive cutting may be contaminated with toxic organic compounds, heavy metals, oils, suspended solids, nutrients, or coliform bacteria, and may cause biochemical oxygen demand.

Landscaping activities related to golf courses should refer to King County's Golf Course BMP Manual (see Chapter 6 of this manual for more information). The BMPs listed below are intended to complement other regulatory requirements. See related Activity Sheets for "[Storage of Pesticides and Fertilizers](#)" and "[Storage of Liquid Materials in Portable Containers](#)."

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in landscaping activities:**

- 1** Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the state.
- 2** Follow manufacturers' recommendations and label directions. Pesticides must never be applied if precipitation is occurring. Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams. (This buffer distance is specified in the Department of Ecology's Stormwater Management Manual).
- 3** Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, by composting, or by burning (where allowed). Do not dispose of collected vegetation into waterways or storm drainage systems.
- 4** Use mulch or other erosion control measures when soils are exposed for more than one week during the dry season or two days during the rainy season.

- 5 Avoid planting Noxious Plant Species or Species of County Concern, particularly near lakes, wetlands, and riparian areas. Contact the [King County Cooperative Extension Services](#) for information on these types of plants.

6 **Routine Maintenance**

- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with proper spill cleanup procedures.
- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution.

ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1 Integrated pest management (IPM), a comprehensive approach to the use of pesticides is the most effective BMP measure that can be taken for herbicide, insecticide, and fungicide use.

 [See BMP Info Sheet 6 in Chapter 4 for information on IPM.](#)

- 2 Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface. Determine the proper fertilizer application for the types of soil and vegetation involved. Soil should be tested for the correct fertilizer usage.

- 3 Use mechanical methods of vegetation removal rather than applying herbicides.

- 4 An effective measure that can be taken to reduce pesticide use, excessive watering, and removal of dead vegetation involves careful soil mixing and layering prior to planting. A topsoil mix or composted organic material should be rototilled into the soil to create a transition layer that encourages deeper root systems and drought-resistant plants. This practice can improve the health of planted vegetation, resulting in better disease resistance and reduced watering requirements.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Clearing and Grading of Small Construction Sites

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This activity applies to you if you clear, grade or prepare land for construction. Stormwater runoff from cleared and graded construction sites can be loaded with suspended sediments and attached pollutants such as oils and greases, toxic hydrocarbon and herbicide compounds, heavy metals, and nutrients. Control of this runoff at the source can prevent large pollutant loadings from ever harming receiving waters. Prior to clearing, grading, and preparation activities for construction sites greater than 5,000 square feet, the [King County Department of Development and Environmental Services](#) must be contacted. You may need to follow the procedures for construction site erosion and sediment control outlined in the King County Surface Water Design Manual.

Note: King County is currently in the process of assessing and coordinating the clearing, grading, and erosion control requirements. The [Surface Water Design Manual](#) will continue to have a chapter dedicated to required erosion control measures. The Design Manual is currently being revised and the scope of the manual will be expanded to address small sites. The County has decided not to include any erosion control requirements in this BMP manual. However, the county will be using the authority of [K.C.C. 9.12](#) and this manual to develop erosion control requirements for those activities not covered by the Design Manual.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Demolition of Buildings

This activity applies to the removal of existing buildings by controlled explosions, wrecking balls, or manual methods, and subsequent clearing of the rubble. Demolition of buildings can introduce a variety of pollutants into stormwater runoff, primarily suspended solids, but also toxic organic compounds and heavy metals.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in building demolition:**

- 1** Spray water throughout the site to help control wind-blowing of fine materials such as soil, concrete dust, paint chips, and metal chips. The amount of water must be controlled so that runoff from the site does not occur, yet dust control is accomplished. Oils must never be used for dust control.
- 2** Place filter fabric or a similarly effective device in all nearby drains to prevent particles and solids from entering the storm drainage system. Filters shall be placed at the beginning of the work day and the accumulated materials collected and disposed properly before removing them at the end of the work day. Filter fabric and other filter devices are commercially available.
- 3** Sweep surrounding street gutters, sidewalks, driveways, and other paved surfaces at the end of each work day to collect and properly dispose of loose debris and garbage, do not hose down the area to a storm drain.

## ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**



A catch basin insert, configured for sediment and debris removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)



*See BMP Info Sheet 9 in Chapter 4 for information.*

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.


Reader Note: The above requirements are minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

## Building Repair, Remodeling, and Construction

This activity refers to you if you are engaged in common on-site labor activities associated with construction of buildings and other structures, remodeling of existing buildings and houses, painting of building exteriors, and general exterior building repair work. Stormwater runoff from building repair, remodeling, and construction work can be contaminated with toxic hydrocarbons in solvents, other toxic organic compounds, suspended solids, heavy metals, abnormal pH, and oils and greases. Concrete pouring is covered under “[Concrete and Asphalt Application at Temporary Sites.](#)”

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in building repair, remodeling, and construction:**

- 1** Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- 2** Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- 3** Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- 4** Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.  
 [See BMP Info sheet 2 in Chapter 4 for information on disposal options.](#)
- 5** Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment

device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day. A combination of a wet vacuum and brooms and dustpans can be used to collect accumulations of dirty runoff. Drain covers, filter fabric, and other containment devices are commercially available if effective runoff control cannot otherwise be provided.

If you need to de-water an excavation site, you must filter the water before discharging to a catch basin or off-site. You should direct the water through hay bales and filter fabric or use other sediment filters or traps.



## **Routine maintenance:**

- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with proper spill cleanup procedures.
- Sweep the area weekly, if it is paved, to collect loose particles, and wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.
- Store toxic material under cover during precipitation events and when not in use (such as overnight). A cover would include tarps or other temporary cover material.

 [See Activity Sheet on “Storage of Liquid Materials Portable Containers.”](#)

## **ADDITIONAL BMPS**

**The following BMPs are not required, but they can provide improved pollution control:**

-  **1** Recycle or reuse left over materials.
-  **2** A catch basin insert, configured for debris and sediment removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.



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## Boat Building, Maintenance, and Repair

This activity group applies to mobile operations, on-shore repair facilities, and on-water fueling and repair operations that are not covered in other activity categories. The variety of practices grouped into this activity can collectively contaminate stormwater and surface water bodies with toxic organic compounds, oils and greases, heavy metals, nutrients, suspended solids, and abnormal pH. Many related businesses have a National Pollutant Discharge Elimination System (NPDES) permit under the Washington State Department of Ecology's General Permit for Boat Building and Repair Facilities. The BMPs discussed below are similar to those listed in the NPDES Permit and apply to areas not covered by a NPDES permit. See [Chapter 6](#) for additional information and check with boat yards and marinas for other BMPs they have developed.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in boat building, mooring, maintenance, and repair, and are not covered by the NPDES Permit for Boat Building and Repair Facilities:**

- 1** Move maintenance and repair activities on-shore if possible. This action reduces some of the potential for direct pollution on water bodies.
- 2** Shelter any blasting and spray painting activities by hanging wind blocking tarps to prevent dust and overspray from escaping.  
 *See Chapter 5 for details on Puget Sound Air Pollution Control Agency (PSAPCA) limitations.*
- 3** Use ground cloths for collection of drips and spills in painting and finishing activities.
- 4** Collect bilge and ballast water that has an oily sheen on the surface for proper disposal rather than dumping in water or on land.  
 *See BMP Info Sheet 2 in Chapter 4 for information on disposal options. Several companies are available for bilge pump-out services. The problem can possibly be avoided if oil-absorbent*

*pads are used to capture the oil in the bilge water before pumping. If pads are used, they must be recycled or properly disposed.*

- 5 Perform paint and solvent mixing, fuel mixing, and similar handling of liquids on-shore, to avoid spillage directly in surface water bodies.
- 6 Collect and properly dispose of wash water from washing painted boat hulls. Consider taking the boat to a local boat yard that is equipped to collect and treat wash water.
- 7 **Routine Maintenance**
  - Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
  - Sweep maintenance yard areas, docks and boat ramps weekly to collect sandblasting material, paint chips, oils, and other loose debris, do not hose down the area to the water or a storm drain.

#### ADDITIONAL BMPs

**The following BMPs are not required, but they can provide improved pollution control:**

- 1 Boat construction and structural repair activities should be covered.
- 2 A tarp should be placed above the water surface underneath the work area on boats or docks to collect drips, spills, paint chips, and loose solids when work is performed over water.
- 3 All used oil and oil filters should be recycled. Most marinas now offer used oil recycling services.
- 4 No soaps or detergents of any kind should be used to wash the topsides of boats where the wash water will enter a lake or the Sound.
- 5 Use sanders that have dust-containment bags.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Vehicle and Equipment Parking and Storage

This activity applies to all types of parking lots (commercial, public, and private), retail store parking lots, fleet vehicle lots and yards (including rent-a-car lots and car dealerships), equipment sale and rental lots, and parking lot driveways. Stormwater runoff from these sites can be contaminated with toxic hydrocarbons and other organic compounds, oils and greases, heavy metals, nutrients, and suspended solids.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you have parking lots and driveways:**



#### **Routine Maintenance:**

- Sweep parking lots, storage areas, and driveways at least once per month to collect dirt, waste, and debris, do not hose down the area to a storm drain.
- If washing of the parking lot occurs, wash water must be discharged to a sanitary sewer or other treatment system. There are services that will clean parking lots and collect water for off-site disposal.



*See BMP Info Sheet 2 for information on disposal options.*

## ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** Encourage employees to carpool or use public transit through incentives.
- 2** Encourage customers to use public transit by rewarding valid transit pass holders with discounts.
- 3** A catch basin insert, configured for oil removal, may remove some of the pollutants in runoff from this activity. (Catch basin inserts require frequent maintenance to be effective. Carefully consider this when making your decisions.)

 [See BMP Info Sheet 9 in Chapter 4 for more information.](#)

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Sidewalk Maintenance

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This activity applies to you if you have sidewalks. Litter accumulation on sidewalks can contribute suspended solids to stormwater runoff; runoff from sidewalks crossing driveways may also have hydrocarbon, oil and grease, and heavy metal contaminants. If weed killers are used on sidewalks, toxic pesticide compounds, oils, and heavy metals may also be introduced into stormwater. If crack sealants or surface coatings are applied, toxic hydrocarbons, oils and greases, and heavy metals may be contributed to stormwater runoff. Sidewalks and driveways are important areas to target for stormwater pollution control because they typically drain directly to stormwater conveyance facilities. Note that BMPs for driveways associated with parking lots are described under “[Vehicle and Equipment Parking and Storage](#).”

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in sidewalk maintenance:**

- 1** Sweep sidewalks at least once a month to collect loose dirt and debris rather than pushing it into the street or gutter or hosing it down. Collected materials must be disposed of as regular garbage.
- 2** Conduct spot stain removal instead of washing entire sidewalk. Do not use soaps and detergents to wash down sidewalks.

## ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1** Use deicing salts and sands only when snow or ice is present (not as a preventive measure) and apply sparingly. Shoveling of snow is always preferred to dumping excessive amounts of deicing materials in an effort to avoid shoveling. If deicing salts are used, the residues and remaining granules should be swept up when the snow and ice has melted, and reused or disposed of in your garbage.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Swimming Pool and Spa Cleaning and Maintenance

This activity applies to all municipal swimming pools, commercially owned swimming pools, and commercially owned spas, including Health Department-regulated facilities (general and limited use). Pools and spas at hotels, motels, apartment and condominium complexes, and other private locations, other than single family residences, are also covered here. Older pools and spas must comply with these provisions as well. Improper drainage of these pools can lead to nutrients, suspended solids, chlorine, and abnormal pH entering the surface water environment. Chemicals used in pool and spa maintenance can also contaminate stormwater if they are not stored properly.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required of all businesses, municipalities, and multiple-family residential complexes engaged in swimming pool and spa cleaning and maintenance:**

- 1** Dechlorinate pool and spa water if it is to be discharged to the ground. Neutralizing chemicals are available for this. Letting the pool or spa “sit” with no neutralizing chemicals may reduce chlorine levels; the facility should not be used during this period. Test kits should be used to determine disinfectant concentrations. State law allows discharges of pool water to the ground, not to a water body or storm drainage system, with a chlorine level of up to 3 ppm. However, the water must not cross property lines, and a satisfactory means for distributing the water to the ground must be used so there is no runoff.
- 2** Regardless of the sanitizing agent used (chlorine, bromine, or ozone), all pool and spa drainage must go to a sanitary sewer or water treatment system if it cannot be dechlorinated sufficiently. If a sanitary sewer is available, all Health Department-regulated facilities are required to be connected for draining and backwash. Prior to draining, the local sewer authority and the King County Department of Metropolitan Services must be notified, as there are concerns with the volume of discharge and disinfectant levels. If the pool or spa does not have a drain to accommodate this, water will have to be pumped or drained

to a sanitary sewer or water treatment system inflow pipe connection. If a sanitary sewer is not available, do not discharge pool or spa water to a septic system, as it may cause the system to fail. Alternative draining and backwash procedures must be approved by the Seattle-King County Department of Public Health in this situation.

- 3 Diatomaceous earth (commonly used as a filtering agent in pools) cannot be discharged to surface waters, storm drainage systems, septic systems, or on the ground.

#### ADDITIONAL BMPS

**The following BMPs are not required, but they can provide improved pollution control:**

- 1 Managers of pools and spas located in sensitive areas or adjacent to shorelines should check with the King County Department of Development and Environmental Services or a local building department should be contacted to determine if other code requirements apply.
- 2 Provide drip pans or buckets beneath drain pipe connections to catch leaks. This will be especially pertinent if pool or spa water that has not been dechlorinated is pumped through piping to a discharge location.
- 3 Hire a professional pool-draining service to collect all pool water for off-site disposal.

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For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Keeping Animals in Controlled Areas

This activity applies to outside kennels, fenced pens, and other animal management areas that do not involve livestock. In other words, it includes all types of animal maintenance practices other than keeping livestock in stables, fields, and pastures. This activity does not cover sheep, pigs, horses, cows, goats, and other hooved animals. Stormwater runoff from cage areas, pens, and yards can contain coliform bacteria, nutrients, and suspended solids.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in management of animals other than livestock:**

- 1 If animals are kept in unpaved and uncovered areas, the ground must either have vegetative cover or some other type of ground cover such as mulch.
- 2 If animals are not leashed or in cages, the area where animals are kept must be surrounded by a fence or other means that prevents animals from moving away from the controlled area where BMPs are used.
- 3 **Routine Maintenance:**
  - Sweep and clean animal keeping areas weekly to collect and dispose of droppings, uneaten food, and other stray particles, do not hose down the area to a storm drain.

For more information or assistance in implementing the best management practices contact: the King County Surface Water Management Division at 296-1900.

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## Keeping Livestock in Stables, Pens, Pastures, or Fields

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This activity applies to management of all types of livestock, including cows, horses, and other hooved animals. Stormwater runoff from areas where livestock are kept may contain coliform bacteria and nutrients from manure. Suspended solids may be present in runoff from areas that are eroding due to overgrazing and stream bank trampling. The King County [Code 21A.30](#) has specific requirements for livestock management. Therefore, there are no additional requirements for keeping livestock in stables, pens, pastures, or fields in this manual.

See [Chapter 5](#) for a summary of the [K.C.C.21A.30](#) requirements. Affected landowners and pasture managers should refer to the King Conservation District and the Washington State University/King County Cooperative Extension Service for information on BMPs for livestock management.

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## Logging

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This activity covers logging activities that fall under the classification of Class IV general forest practices. These are situations where timber harvesting is done in the process of converting forest lands into other land uses, such as forest cutting for construction of homes. The primary concern with this logging activity in the context of stormwater pollution is the effect of timber cutting and understory clearing on erosion processes. Logging activities can introduce large concentrations of suspended solids and nutrients into stormwater runoff from bare soil and vegetation debris, as well as toxic organic compounds, oils and greases, and heavy metals from vehicles and pesticides.

The King County Sensitive Areas Ordinance has requirements for logging near streams, wetlands and other sensitive areas and the [King County Surface Water Design Manual](#) has requirements for clearing, grading of sites. Additionally, log yard operations are required to apply for coverage under the State Department of Ecology's NPDES baseline general permit. Therefore, there are no additional requirements for logging in this manual.

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## Mining and Quarrying of Sand, Gravel, and Other Materials

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This activity applies to surface excavation and on-site storage of sand, gravel, minerals, peat, clay, rock, and other materials that are mined in unincorporated King County. Mining operations have the potential to introduce a variety of pollutants into runoff, including nutrients, suspended solids, abnormal pH, and metals. Precipitation can easily erode cut slope faces and stockpiled materials, readily causing stormwater contamination problems.

The Department of Ecology regulates all mining activities in the state for protection of water quality, and thus is the authority for enforcement of stormwater requirements related to water quality protection. Ecology has developed a National Pollutant Discharge Elimination System (NPDES) permit for Sand and Gravel Operations, Rock Quarries, and Similar Mining Facilities, Including Stockpiles of Mined Materials, Concrete Batch Operations and Asphalt Batch Operations. The King County Department of Development and Environmental Services ([DDES](#)) also has authority to regulate mining activities under the Drainage Ordinance, with Ecology's water quality guidelines as the basis. Therefore, there are no additional requirements for mining and quarrying in this manual.

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## Well and Geotechnical Drilling

This activity applies to you if you drill water wells, environmental protection and monitoring wells, and geotechnical borings that use machinery in the drilling. It does not apply to the use of devices such as hand augers. Drilling activities have the potential to impact nearby surface water resources and underlying groundwater resources due to erosion sedimentation, and leaching of contaminants. Stormwater runoff that comes in contact with cuttings and/or spoil piles can carry suspended solids to receiving waters. If cuttings or spoil piles contain material removed from a well or boring that was drilled into contaminated subsoils, stormwater can carry those same contaminants into receiving waters. Similarly, decontamination water and water used in the drilling operation can readily carry pollutants away from the drilling site if controls are not used. Ensure that proper permits are obtained for drilling activities, and for clearing and grading the access routes and the work site. Contact the [King County Department of Development and Environmental Services](#) for information.

### MINIMUM REQUIREMENTS

**The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in mechanical drilling of wells and geotechnical drilling.**

- 1** Determine if environmentally sensitive areas (streams, wetlands, erosion hazards, and landslide hazards) exist at or within the area of influence of the work site.
- 2** Develop and implement methods of mitigating potential impacts to surrounding areas. The driller must be equipped to quickly respond to unusual conditions that may arise.
- 3** Locate and prepare access roadways such that the amount of excavation and the potential for erosion is minimized. See the [King County Surface Water Design Manual](#) for information on vehicle access preparation and maintenance and erosion control measures.
- 4** Contain accumulated water and sediment on-site and direct through a geotextile filtration system (or other system) before discharging to the surrounding ground surface. If sediment-laden water does escape from the immediate drilling location,

block any nearby catch basins using fabric sand bags, straw bales, or erosion fences. Similarly, block flow into any nearby stream or wetland, and renew efforts to retain all sediment at the drilling location.

- 5 During wet weather divert any concentrated flows of water into the site using sandbags or other such check dams up-slope from the site.
- 6 Dispose of soil cuttings and accumulated sediment by appropriate methods. None of this material can be dumped in or near a wetland, stream, lake, or Puget Sound. If cuttings or other soils disturbed in the drilling process are to be temporarily stockpiled on-site, they must be covered and surrounded by a berm or filter device.

 *See the Activity Sheet for “Storage of Soil, Sand, Salt, and Other Erodible Materials.” for ideas.*

- 7 Stabilize exposed soils at the end of the job, using mulch or other erosion control measures.

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